AMENDATORY SECTION (Amending WSR 98-07-009, filed 3/6/98, effective 5/6/98)

WAC 296-45-25510 Fall protection. (1) Personal fall arrest equipment shall meet the requirements of WAC 296-155-245.

(2) ((~~Body belts and safety straps for work positioning shall meet the requirements of WAC 296-155-245.~~)) Specific requirements for lineman's belts, safety straps and lanyards.

(a) All fabric used for safety straps must withstand an A.C. dielectric test of not less than 25,000 volts per foot "dry" for 3 minutes, without visible deterioration.

(b) All fabric and leather used must be tested for leakage current and must not exceed 1 milliampere when a potention of 3,000 volts is applied to the electrodes positioned 12 inches apart.

(c) Direct current tests may be permitted in lieu of alternating current tests.

(d) The cushion part of the body belt must:

(i) Contain no exposed rivets on the inside;

(ii) Be at least three (3) inches in width;

(iii) Be at least five thirty-seconds (5/32) inch thick, if made of leather; and

(iv) Have pocket tabs that extended at least 1 1/2 inches down and three (3) inches back of the inside of circle of each D ring for riveting on plier or tool pockets. On shifting D belts, this measurement for pocket tabs must be taken when the D ring section is centered.

(e) A maximum of four (4) tool loops must be so situated on the body belt that four (4) inches of the body belt in the center of the back, measuring from D ring to D ring, must be free of tool loops, and any other attachments.

(f) Suitable copper, steel, or equivalent liners must be used around bar of D rings to prevent wear between these members and the leather or fabric enclosing them.

(g) All stitching must be of a minimum 42-pound weight nylon or equivalent thread and must be lock stitched. Stitching parallel to an edge must not be less than three-sixteenths (3/16) inch from edge of narrowest member caught by the thread. The use of cross stitching on leather is prohibited.

(h) The keeper of snaphooks must have a spring tension that will not allow the keeper to begin to open with a weight of 2 1/2 pounds or less, but the keeper of snaphooks must begin to open with a weight of four (4) pounds, when the weight is supported on the keeper against the end of the nose.

(i) Testing of lineman's safety straps, body belts and lanyards must be in accordance with the following procedure:

(i) Attach one end of the safety strap or lanyard to a rigid support, the other end must be attached to a 250-pound canvas bag of sand;

(ii) Allow the 250-pound canvas bag of sand to free fall 4 feet for (safety strap test) and 6 feet for (lanyard test); in each case stopping the fall of the 250-pound bag;

(iii) Failure of the strap or lanyard must be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the strap or lanyard. The entire "body belt assembly" must be tested using one D ring. A safety strap or lanyard must be used that is capable of passing the "impact loading test" and attached as required in (i)(i) of this subsection. The body belt must be secured to the 250-pound bag of sand at a point to simulate the waist of a man and allowed to drop as stated in (i)(ii) of this subsection. Failure of the body belt must be indicated by any breakage, or slippage sufficient to permit the bag to fall free of the body belt.

(3) Body belts, safety straps, lanyards, lifelines, and body harnesses shall be inspected before use each day to determine that the equipment is in safe working condition. Defective equipment may not be used.

(4) Employees shall not wear climbers while doing work where they are not required. Employees shall not continue to wear their climbers while working on the ground; except for momentary or short periods of time on the ground.

(5) Employees, when working from a hook ladder, must either belt themselves securely to the ladder, attach themselves to the structures by means of a safety line, or belt themselves to ladder safety equipment, which shall consist of a safety rope or belting threaded through the rungs or secured to the ladder at intervals of not more than three feet.

(6) Before an employee throws his/her weight on a belt, the employee shall determine that the snap or fasteners are properly engaged.

(7) Safety straps shall not be placed around poles above the cross-arm except where it is not possible for the strap to slide or be slipped over the top of the pole by inadvertence of the employee. Neither end of the strap shall be allowed to hang loose or dangle while the employee is ascending or descending poles or other structures.

(8) Body belts and safety straps shall not be stored with sharp-edged tools or near sharp objects. When a body belt, safety strap and climbers are kept in the same container, they shall be stored in such a manner as to avoid cutting or puncturing the material of the body belt or safety strap with the gaffs or climbers.

(9) Employees shall not attach metal hooks or other metal

devices to body belts. Leather straps or rawhide thongs shall have hardwood or fibre crossbars. Leather straps and rawhide thongs shall not have metal or other conductive crossbars on them.

(10) Climbing gaffs shall be kept properly sharpened and shall be at least 1-1/8 inches in length.

(11) Lifelines shall be protected against being cut or abraded.

(12) Fall arrest equipment, work positioning equipment, or travel restricting equipment shall be used by employees working at elevated locations more than 4 feet (1.2 m) above the ground on poles, towers, or similar structures if other fall protection has not been provided. Fall protection equipment is not required to be used by a qualified employee climbing or changing location on poles, towers, or similar structures, unless conditions, such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure, could cause the employee to lose his or her grip or footing.

Note 1: This subsection applies to structures that support overhead electric power generation, transmission, and distribution lines and equipment. It does not apply to portions of buildings, such as loading docks, to electric equipment, such as transformers and capacitors, nor to aerial lifts. Requirements for fall protection associated with walking and working surfaces are contained in WAC 296-155-245; requirements for fall protection associated with aerial lifts are contained in chapter 296-155 WAC, Part J-1.

Note 2: Employees undergoing training are not considered "qualified employees" for the purposes of this provision. Unqualified employees (including trainees) are required to use fall protection any time they are more than 4 feet (1.2 m) above the ground.

(13) The following requirements apply to personal fall arrest systems:

(a) When stopping or arresting a fall, personal fall arrest systems shall limit the maximum arresting force on an employee to 1800 pounds (8 kN) if used with a body harness.

(b) Personal fall arrest systems shall be rigged such that an employee can neither free fall more than 6 feet (1.8 m) nor contact any lower level.

(14) If vertical lifelines or droplines are used, not more than one employee may be attached to any one lifeline.

(15) Snaphooks may not be connected to loops made in webbing-type lanyards.

(16) Snaphooks may not be connected to each other.

AMENDATORY SECTION (Amending WSR 98-07-009, filed 3/6/98, effective 5/6/98)

WAC 296-45-315 Materials handling and storage. (1) General. Material handling and storage shall conform to the requirements of chapter 296-24 WAC, Part D.

(2) Materials storage near energized lines or equipment. In areas not restricted to qualified persons only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances plus an amount providing for the maximum sag and side swing of all conductors and providing for the height and movement of material handling equipment:

(a) For lines and equipment energized at 50 kV or less, the distance is 10 feet (305 cm).

(b) For lines and equipment energized at more than 50 kV, the distance is 10 feet (305 cm) plus 4 inches (10 cm) for every 10 kV over 50 kV.

(c) In areas restricted to qualified employees, material may not be stored within the working space about energized lines or equipment.

Note: Requirements for the size of the working space are contained in WAC 296-45-475(1) and 296-45-48515.

(3) Prior to unloading steel, poles, crossarms and similar materials, the load shall be thoroughly examined to determine if the load has shifted, binders or stakes have broken or the load is otherwise hazardous to employees. The hoist rope shall not be wrapped around the load. This provision shall not apply to electric construction crews when setting or removing poles.

(4) Pole handling.

(a) During pole hauling operations, all loads shall be secured to prevent displacement, and a red flag shall be displayed at the trailing end of the longest pole.

(b) While loading and unloading materials, roadways shall not be blocked unless approved traffic control is used.

(c) When hauling poles during darkness, illuminated warning devices shall be attached to the trailing end of the longest pole in accordance with the state of Washington motor vehicle code.

(d) Framing. During framing operations, employees must not work under a pole or a structure suspended by a crane, A-frame or similar equipment unless the pole or structure is adequately supported.

(5) Tag lines. When necessary to control loads, tag lines or other approved devices shall be used.

(6) Oil filled equipment. During construction or repair of oil filled equipment, the oil may be stored in temporary containers other than those required by WAC 296-155-270, such as pillow tanks.

(7) Storage of tools and materials. All tools and materials shall be stored in a safe and orderly manner in yards for equipment and other areas.

AMENDATORY SECTION (Amending WSR 03-17-071, filed 8/19/03, effective 11/1/03)

WAC 296-45-325 Working on or near exposed energized parts. This section applies to work on exposed live parts, or near enough to them, to expose the employee to any hazard they present.

(1) General. Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more. Electric lines and equipment shall be considered and treated as energized unless the provisions of WAC 296-45-175 through 296-45-17565 or 296-45-335 have been followed.

(2) Except as provided in subsection (3) of this section, at least two qualified employees shall be present while the following types of work are being performed:

(a) Installation, removal, or repair of lines that are energized at more than 600 volts;

(b) Installation, removal, or repair of deenergized lines if an employee is exposed to contact with other parts energized at more than 600 volts;

(c) Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts;

(d) Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts; and

(e) Other work that exposes an employee to electrical hazards greater than or equal to those posed by operations that are specifically listed in subsection (2)(a) through (d) of this section.

Note 1: One employee will serve principally as a standby person who must be so located that they may physically reach the other employee in the event of an accident either with their hand or with a hot stick twelve feet or less in length. The standby will be so positioned as to be able to observe the other employee, their bodily movements, and verbally warn of any impending dangers. In no case when working in pairs will employees work simultaneously on energized wires or parts of different phases or polarity;

Note 2: When installing or removing a hot line clamp connection on a multiphase system, it is permissible for the second employee to stand by at the lower controls of the aerial lift provided the connection or disconnection

does not interrupt or pick up load. The hot line clamp and connecting jumper must be constructed so it cannot make contact with any other energized parts. The work must not be performed above lines or apparatus energized at more than 600 V.

Note 3: In cases of necessity the standby person may temporarily assist the other employee provided that they both work on wires or parts of the same phase or polarity. Both employees shall so position themselves so that the presence of the second person does not increase the hazard.

(3) The provisions of WAC 296-45-325(2) do not apply ((~~in the following circumstances:~~)) to (a) through (e) of this subsection. In addition to the requirements of subsection (4) of this section, a qualified employee working under this subsection (3), must position themselves so that he/she is neither within reach of nor otherwise exposed to contact with energized parts.

(a) When re-fusing circuits or equipment with a hot stick.

(b) When operating switches by means of operating handle or switch sticks.

(c) When installing or removing a hot line clamp connection with an approved hot stick on a single-phase line or apparatus, providing that the connection or disconnection does not interrupt or pick up a load.

Note 1: The hot line clamp and connecting jumper must be constructed so that it cannot make contact with any other energized parts.

Note 2: On a multiphase feed this applies only when one single-phase line or apparatus is present on the load side.

(d) When installing or removing by hot stick simple load metering devices provided the connection does not interrupt or pickup load.

(e) Emergency repairs to the extent necessary to safeguard the general public.

(4) "Minimum approach distances." The employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts than set forth in Table 1 through Table 4, unless:

The employee is insulated from the energized part (insulating gloves or insulating gloves and sleeves worn in accordance with subsection (6) of this section are considered insulation of the employee only with regard to the energized part upon which work is being performed); or

The energized part is insulated from the employee and from any other conductive object at a different potential.

Note 1: WAC 296-45-475 (5)(a) and 296-45-48525(1) contain requirements for the guarding and isolation of live parts. Parts of electric circuits that meet these two provisions are not considered as "exposed" unless a guard is removed or an employee enters the space intended to provide isolation from the live parts.

Note 2: When an employee is required to work on or within reach of any unprotected conductors that are or may become energized at more than 50 volts and less than 600 volts between phases, they shall take the following precautions:

1: They shall wear approved insulating gloves or insulating gloves and sleeves during the time they are working on such conductor, or

2: They shall cover, with approved devices, any adjacent unprotected conductor that could be touched by any part of their body, and use insulated tools.

3: Cables which are properly insulated for the voltages to which they are energized, shall be considered as an effective barrier to protect the employees and Table 1 need not apply.

(5) Initial determination.

(a) Before any work is performed, the location of energized lines and their condition, the location and condition of energized equipment, the condition of the poles, the location of circuits and equipment including power communication lines, CATV and fire alarm circuits, shall be determined as shall any other particular hazard of a particular work site.

(b) No work shall be performed on energized lines or parts until the voltage of such equipment and lines is determined.

(6) Type of insulation. If the employee is to be insulated from energized parts by the use of insulating gloves (under subsection (4) of this section), insulating sleeves shall also be used. However, insulating sleeves need not be used under the following conditions:

(a) If exposed energized parts on which work is not being performed are insulated from the employee; and

(b) If such insulation is placed from a position not exposing the employee's upper arm to contact with other energized parts.

(7) Working position. The employer shall ensure that each employee, to the extent that other safety-related conditions at the worksite permit, works in a position from which a slip or shock will not bring the employee's body into contact with exposed, uninsulated parts energized at a potential different from the employee.

(8) Making connections. The employer shall ensure that connections are made as follows:

(a) In connecting deenergized equipment or lines to an energized circuit by means of a conducting wire or device, an employee shall first attach the wire to the deenergized part;

(b) When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee shall remove the source end first; and

(c) When lines or equipment are connected to or disconnected from energized circuits, loose conductors shall be kept away from exposed energized parts.

(9) Rubber gloves can only be used on 5,000 volts or less between phases.

(10) It shall not be permissible to consider one part of a high voltage switch or disconnect as deenergized for the purpose of doing work on it if the remainder of the switch or disconnect remains energized unless approved barriers are erected which will prevent employees who are doing the work on such equipment from coming in direct contact with the energized parts.

(11) Conductor support tools such as link sticks, strain carriers, and insulator cradles may be used: Provided, That the clear insulation is at least as long as the insulator string or the minimum distance specified in Table 1 for the operating voltage.

(12) Apparel.

(a) When work is performed within reaching distance of exposed energized parts of equipment, the employer shall ensure that each employee removes or renders nonconductive all exposed conductive articles, such as key or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.

(b) The employer shall train each employee who is exposed to the hazards of flames or electric arcs in the hazards involved.

(c) The employer shall ensure that each employee who is exposed to the hazards of flames or electric arcs does not wear clothing that, when exposed to flames or electric arcs, could increase the extent of injury that would be sustained by the employee.

Note: Clothing made from the following types of fabrics, either alone or in blends, is prohibited by this subsection, unless the employer can demonstrate that the fabric has been treated to withstand the conditions that may be encountered or that the clothing is worn in such a manner as to eliminate the hazard involved: Acetate, nylon, polyester, rayon.

(d) Workers shall wear clothing appropriate to the season and the kind of work being performed. Shirts or jumpers must have full length sleeves that are rolled down. Protective hard hats and eye protection shall be worn when working on or near live parts or while climbing poles.

(13) Fuse handling. When fuses must be installed or removed with one or both terminals energized at more than 300 volts or with exposed parts energized at more than 50 volts, the employer shall ensure that tools or gloves rated for the voltage are used. When expulsion-type fuses are installed with one or both terminals energized at more than 300 volts, the employer shall ensure that each employee wears eye protection meeting the requirements of WAC 296-45-25505(1), uses a tool rated for the voltage, and is clear of the exhaust path of the fuse barrel.

(14) Covered (noninsulated) conductors. The requirements of this section which pertain to the hazards of exposed live parts also apply when work is performed in the proximity of covered (noninsulated) wires.

(15) Noncurrent-carrying metal parts. Noncurrent-carrying metal parts of equipment or devices, such as transformer cases and circuit breaker housings, shall be treated as energized at the highest voltage to which they are exposed, unless the employer inspects the installation and determines that these parts are grounded before work is performed.

(16) Opening circuits under load. Devices used to open circuits under load conditions shall be designed to interrupt the current involved.

Table 1: AC Live Work Minimum Approach Distance

Distance to employee

Voltage in kilovolts phase to phase*	Phase to ground		Phase to Phase	
	(m)	(ft-in)	(m)	(ft-in)
0 to 0.050	not specified		not specified	
0.051 to 0.300	avoid contact		avoid contact	
0.301 to 0.750	0.31	1-0	0.31	1-0
0.751 to 15	0.65	2-2	0.67	2-3
15.1 to 36.0	0.77	2-7	0.86	2-10
36.1 to 46.0	0.84	2-9	0.96	3-2
46.1 to 72.5	1.00**	3-3**	1.20	3-11
72.6 to 121	0.95**	3-2**	1.29	4-3
138 to 145	1.09	3-7	1.50	4-11
161 to 169	1.22	4-0	1.71	5-8
230 to 242	1.59	5-3	2.27	7-6
345 to 362	2.59	8-6	3.80	12-6
500 to 550	3.42	11-3	5.50	18-1
765 to 800	4.53	14-11	7.91	26-0

*For single-phase systems, use the highest voltage available.

For single-phase lines off three phase systems, use the phase-to-phase voltage of the system.

**The 46.1 to 72.5 kV phase-to-ground 3-3 distance contains a 1-3 electrical component and a 2-0 inadvertent movement component while the 72.6 to 121 kV phase-to-ground 3-2 distance contains a 2-2 electrical component and a 1-0 inadvertent movement component.

Note 1: These distances take into consideration the highest switching surge an employee will be exposed to on any system with air as the insulating medium and the maximum voltages shown.

Note 2: The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

Note 3: See Appendix B to this section for information on how the minimum approach distances listed in the tables were derived.

AMENDATORY SECTION (Amending WSR 98-07-009, filed 3/6/98, effective 5/6/98)

WAC 296-45-385 Overhead lines. This section provides additional requirements for work performed on or near overhead lines and equipment.

(1) General.

(a) Before elevated structures and adjacent structures, such as poles or towers of the adjacent supporting poles, structures, and conductor supporting hardware, are subjected to

such stresses as climbing or the installation or removal of equipment may impose, the employer shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses. If the pole or other structure cannot withstand the loads which will be imposed, it shall be braced or otherwise supported so as to prevent failure.

Note: Appendix C contains test methods that can be used in ascertaining whether a wood pole is capable of sustaining the forces that would be imposed by an employee climbing the pole. This paragraph also requires the employer to ascertain that the pole can sustain all other forces that will be imposed by the work to be performed.

(b) When poles are set, moved, or removed near exposed energized overhead conductors, the pole may not contact the conductors.

(c) When a pole is set, moved, or removed near an exposed energized overhead conductor, the employer shall ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and that no employee contacts the pole with uninsulated parts of his or her body.

(d) To protect employees from falling into holes into which poles are to be placed, the holes shall be attended by employees or physically guarded whenever anyone is working nearby.

(2) Installing and removing overhead lines. The following provisions apply to the installation and removal of overhead conductors or cable.

(a) The employer shall use the tension stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables being installed or removed will contact energized power lines or equipment.

(b) When conductors are being strung in or removed, they shall be kept under positive control to prevent accidental contact with energized circuit.

(c) The protective measures required by WAC 296-45-375(10)(c) for mechanical equipment shall also be provided for conductors, cables, and pulling and tensioning equipment when the conductor or cable is being installed or removed close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the wire or cable being installed or removed:

(i) Failure of the pulling or tensioning equipment;

(ii) Failure of the wire or cable being pulled; or

(iii) Failure of the previously installed lines or equipment.

(d) ((~~If the conductors being installed or removed cross over energized conductors in excess of 600 volts and if the design of the circuit-interrupting devices protecting the lines so permits, the automatic-reclosing feature of these devices shall be made inoperative.~~)) When conductors being installed or removed cross over energized conductors in excess of 600 volts, rope nets or guard structures must be installed unless provision is made to isolate or insulate the worker or the energized

conductor. Where the design of the circuit-interrupting devices protecting the lines so permits, the automatic-reclosing feature of these devices must be made inoperative. In addition, the line being strung must be grounded on either side of the crossover or considered and worked as energized.

(e) Before lines are installed parallel to existing energized lines, the employer shall make a determination of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous. Unless the employer can demonstrate that the lines being installed are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, the following requirements also apply:

(i) Each bare conductor shall be grounded in increments so that no point along the conductor is more than 2 miles (3.22 km) from a ground.

(ii) The grounds required in subsection (2)(e)(i) of this section shall be left in place until the conductor installation is completed between dead ends.

(iii) The grounds required in subsection (2)(e)(i) of this section shall be removed as the last phase of aerial cleanup.

(iv) If employees are working on bare conductors, grounds shall also be installed at each location where these employees are working, and grounds shall be installed at all open dead-end or catch-off points or the next adjacent structure.

(v) If two bare conductors are to be spliced, the conductors shall be bonded and grounded before being spliced.

(f) Reel handling equipment, including pulling and tensioning devices, shall be in safe operating condition and shall be leveled and aligned.

(g) Load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists may not be exceeded.

(h) Each pull must be snubbed or dead ended at both ends before subsequent pulls.

(3) Pulling lines and accessories shall be inspected prior to each use and replaced or repaired when damaged or when there is a reasonable basis to doubt the dependability of such lines or accessories.

(4) Conductor grips may not be used on wire rope, unless the grip is specifically designed for this application.

(5) Reliable communications, through two-way radios or other equivalent means, shall be maintained between the reel tender and the pulling rig operator.

(6) The pulling rig may only be operated when it is safe to do so.

Note: Examples of unsafe conditions include employees in locations prohibited by subsection (7) of this section, conductor and pulling line hang-ups, and slipping of the conductor grip.

(7) While the conductor or pulling line is being pulled (in

motion) with a power-driven device, employees are not permitted directly under overhead operations or on the cross arm, except as necessary to guide the stringing sock or board over or through the stringing sheave.

(8) Live-line bare-hand work is prohibited.

(9) When winches, trucks, or tractors are being used to raise poles, materials, to pull in wires, to pull slack or in any other operation, there shall be an operator at the controls unless the machinery or process is stopped.

(10) Leadworkers shall designate an employee to give signals when required.

(11) Raising poles, towers or fixtures in the close proximity of high voltage conductors shall be done under the supervision of a qualified employee.

(12) Employees shall not crawl over insulator strings but shall use a platform or other approved device to work from when making dead ends or doing other work beyond strings of insulators, at such distance that they cannot reach the work from the pole or fixture. While working on the platform or other device, they shall be secured with safety straps or a rope to prevent falling. The provision of this subsection does not apply to extra high voltage bundle conductors when the use of such equipment may produce additional hazard. Climbing over dead end assemblies is permissible only after they have been completed and pinned in the final position.

(13) Towers and structures. The following requirements apply to work performed on towers or other structures which support overhead lines.

(a) The employer shall ensure that no employee is under a tower or structure while work is in progress, except where the employer can demonstrate that such a working position is necessary to assist employees working above.

(b) Tag lines or other similar devices shall be used to maintain control of tower sections being raised or positioned, unless the employer can demonstrate that the use of such devices would create a greater hazard.

(c) The loadline may not be detached from a member or section until the load is safely secured.

(d) No one must be permitted to remain in the footing while equipment is being spotted for placement.

(e) A designated employee must be utilized to determine that required clearance is maintained in moving equipment under or near energized lines.

(14) All conductors, subconductors, and overhead ground conductors must be bonded to the tower at any isolated tower where it may be necessary to complete work on the transmission line.

(15) A transmission clipping crew shall have a minimum of two structures clipped in between the crew and the conductor

being sagged.

((~~(15)~~)) (16) While on patrol at night and operating a motor vehicle on public highways, there shall be two employees, at least one of whom shall be a journey level lineworker or otherwise qualified employee. If repair to line or equipment is found to be of such nature as to require two lineworkers, work shall not proceed until additional help has been obtained provided that in cases of emergency where delay would increase the danger to life, limb, or substantial property, one employee may clear the hazard without assistance.

((~~(16)~~)) (17) Except during emergency restoration procedures, work shall be discontinued when adverse weather conditions would make the work hazardous in spite of the work practices required by this section.

Note: Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make this work too hazardous to perform, except under emergency conditions.

AMENDATORY SECTION (Amending WSR 98-07-009, filed 3/6/98, effective 5/6/98)

WAC 296-45-475 Substations. This section provides additional requirements for substations and for work performed in them.

(1) Access and working space. Sufficient access and working space shall be provided and maintained about electric equipment to permit ready and safe operation and maintenance of such equipment.

Note: Guidelines for the dimensions of access and working space about electric equipment in substations are contained in American National Standard-National Electrical Safety Code, ANSI C2-1997. Installations meeting the ANSI provisions comply with WAC 296-45-475(1). An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with WAC 296-45-475(1) if the employer can demonstrate that the installation provides ready and safe access based on the following evidence:

(a) That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made;

(b) That the configuration of the installation enables employees to maintain the minimum approach distances required by WAC 296-45-325(5) while they are working on exposed, energized parts; and

(c) That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by access and working space meeting ANSI C2-1997.

(d) Precaution must be taken to prevent accidental operation of relays or other protective devices due to jarring, vibration, or improper wiring.

(2) Draw-out-type circuit breakers. When draw-out-type circuit breakers are removed or inserted, the breaker shall be in the open position. The control circuit shall also be rendered inoperative, if the design of the equipment permits.

(3) Substation fences. Conductive fences around substations ((~~shall~~)) must be grounded. When a substation fence ((~~is~~)) must be expanded or ((~~a section is~~)) removed((~~,~~)) fence ((~~grounding~~)) continuity ((~~shall~~)) must be maintained((~~,~~)) and bonding ((~~shall~~)) must be used to prevent electrical discontinuity. A temporary fence affording similar protection when the site is unattended, must be provided. Adequate interconnection with ground must be maintained between temporary fence and permanent fence.

(4) Guarding of rooms containing electric supply equipment.

(a) Rooms and spaces in which electric supply lines or equipment are installed shall meet the requirements of subsection (4)(b) through (e) of this section under the following conditions:

(i) If exposed live parts operating at 50 to 150 volts to ground are located within 8 feet of the ground or other working surface inside the room or space;

(ii) If live parts operating at 151 to 600 volts and located within 8 feet of the ground or other working surface inside the room or space are guarded only by location, as permitted under subsection (5)(a) of this section; or

(iii) If live parts operating at more than 600 volts are located within the room or space, unless:

(A) The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts; or

(B) The live parts are installed at a height above ground and any other working surface that provides protection at the voltage to which they are energized corresponding to the protection provided by an 8-foot height at 50 volts.

(b) The rooms and spaces shall be so enclosed within fences, screens, partitions, or walls as to minimize the possibility that unqualified persons will enter.

(c) Signs warning unqualified persons to keep out shall be displayed at entrances to the rooms and spaces.

(d) Entrances to rooms and spaces that are not under the observation of an attendant shall be kept locked.

(e) Unqualified persons may not enter the rooms or spaces while the electric supply lines or equipment are energized.

(5) Guarding of energized parts.

(a) Guards shall be provided around all live parts operating at more than 150 volts to ground without an insulating covering, unless the location of the live parts gives sufficient horizontal or vertical or a combination of these clearances to

minimize the possibility of accidental employee contact.

Note: Guidelines for the dimensions of clearance distances about electric equipment in substations are contained in American National Standard-National Electrical Safety Code, ANSI C2-1997. Installations meeting the ANSI provisions comply with subsection (5)(a) of this section. An installation that does not conform to this ANSI standard will, nonetheless, be considered as complying with subsection (5)(a) of this section if the employer can demonstrate that the installation provides sufficient clearance based on the following evidence:

(i) That the installation conforms to the edition of ANSI C2 that was in effect at the time the installation was made;

(ii) That each employee is isolated from energized parts at the point of closest approach; and

(iii) That the precautions taken when work is performed on the installation provide protection equivalent to the protection that would be provided by horizontal and vertical clearances meeting ANSI C2-1997.

(b) Except for fuse replacement and other necessary access by qualified persons, the guarding of energized parts within a compartment shall be maintained during operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.

(c) When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.

(6) Substation entry.

(a) Upon entering an attended substation, each employee other than those regularly working in the station shall report his or her presence to the employee in charge in order to receive information on special system conditions affecting employee safety.

(b) The job briefing required by WAC 296-45-135 shall cover such additional subjects as the location of energized equipment in or adjacent to the work area and the limits of any deenergized work area.